

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a lower electrode formed on a substrate;

a capacitive insulating film formed out of a ferroelectric film on the lower electrode;

an upper electrode formed on the capacitive insulating film;

a contact layer formed on the upper electrode;

an insulating film formed to cover the lower electrode, the capacitive insulating film, the upper electrode and the contact layer;

a contact hole passing through the insulating film and the contact layer to reach the upper electrode; and

a metal interconnect, which is defined on a part of the insulating film, filled in the contact hole and connected to the upper electrode,

wherein the contact layer is a single-layer film or a multilayer structure, the single-layer film being made of a metal oxide or a metal nitride, the multilayer structure being made up of metal oxide and metal nitride films.

2. The device of Claim 1, wherein the upper electrode contains Pt or Ir, and

wherein the metal oxide film is made of an oxide of Ti or an oxide of Ta, while the metal nitride film is made of a

nitride of Ti or a nitride of Ta.

3. A method for fabricating a semiconductor device, comprising the steps of:

a) depositing a first metal film, a ferroelectric film, a second metal film and a single-layer film or a multilayer structure in this order on a substrate, the single-layer film being made of a metal oxide or a metal nitride, the multilayer structure being made up of metal oxide and metal nitride films;

b) patterning the single-layer film or the multilayer structure to form a contact layer;

c) patterning the second metal film to form an upper electrode;

d) patterning the ferroelectric film to form a capacitive insulating film;

e) patterning the first metal film to form a lower electrode;

f) depositing an insulating film covering the lower electrode, the capacitive insulating film, the upper electrode and the contact layer;

g) opening a contact hole that passes through the insulating film and the contact layer to reach the upper electrode; and

h) defining a metal interconnect, which is filled in the

contact hole and connected to the upper electrode, on a part of the insulating film.

4. The device of Claim 3, wherein in the step a), the single-layer film or the multilayer structure is deposited by a sputtering process using a target of a metal oxide or a metal nitride or by a reactive sputtering process performed within an ambient containing oxygen gas or nitrogen gas.

5. The method of Claim 3, further comprising the step of annealing the second metal film at a temperature between 300°C and 800°C.